



CHEMISTRY NMDCAT

(UNIT-8)

TOPICS

✓ **Fundamental Principles**

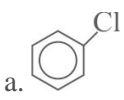

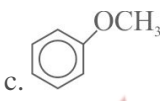
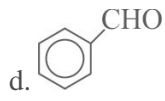
✓ **Hydrocarbons**

- Q.1** The group which activates the benzene ring except
 a. $-\text{OH}$ b. $-\text{OCH}_3$
 c. $-\text{NH}_2$ d. $-\text{C}\equiv\text{N}$
- Q.2** Which may not present as heteroatom in heterocyclic compounds generally
 a. Sulphur b. Oxygen
 c. Nitrogen d. Bromine
- Q.3** The IUPAC name of the following compound is
 $\text{H}_3\text{CCH}_2(\text{CH}_3)\text{C}(\text{C}_2\text{H}_5)\text{CH}_2\text{CH}_2\text{CH}_3$
 a. 3-Ethyl-3-methylhexane b. 2-Ethyl-3-methylhexane
 c. 3-Methyl-3-ethylhexane d. 4-Ethyl-2-methylhexane
- Q.4** The nucleophilicity of benzene ring is increased if _____ group is attached to it
 a. $-\text{COR}$ b. $-\text{CH}_3$
 c. $-\text{CN}$ d. $-\text{Cl}$
- Q.5** The common name of the compound $\text{CH}_2(\text{COOH})_2$ is
 a. Malonic acid b. Propan-1, 3-dioic acid
 c. Propan-1, 3-oic acid d. Both "A" and "C"
- Q.6** _____ is less reactive than benzene although it contains ortho, para directing group
 a. Nitrobenzene b. Phenol
 c. Chlorobenzene d. Benzene sulphonic acid
- Q.7** The bond between carbon 2 and 3 in the $\text{CH}_3-\text{CH}=\text{CH}_2$ involves the hybridization
 a. sp^2 and sp^2 b. sp and sp
 c. sp and sp^2 d. sp^2 and sp^3
- Q.8** The most stable carbanion is
 a. CH_3^- b. $(\text{CH}_3)_2\text{CH}^-$
 c. $(\text{CH}_3)_3\text{C}^-$ d. CH_3CH_2^-
- Q.9** Which structures show a primary alcohol that cannot be dehydrated to form an alkene
 I CH_3OH
 II $\text{CH}_3\text{CH}_2\text{OH}$
 III $\text{CH}_3\text{CH}(\text{OH})\text{CH}_3$
 a. Only I b. Only II and III
 c. Only I and II d. Only I and III
- Q.10** Nitration of toluene in the presence of H_2SO_4 at 100°C gives
 a. p-nitrotoluene b. o-nitrotoluene
 c. 2,4-dinitrotoluene d. 2,4,6-trinitrotoluene
- Q.11** The combustion of one mole of C_3H_8 will produce how many moles of H_2O
 a. 4 b. 6
 c. 3 d. 8
- Q.12** Electrophilic species
 a. Have complete electron shells b. Have unshared electrons pairs
 c. Are deficient in electrons d. Are negatively charged
- Q.13** Which alkene could exist in cis and trans forms?
 a. $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}=\text{CH}_2$ b. $\begin{array}{c} \text{CH}_3\text{CH}_2\text{C}=\text{CH}_2 \\ | \\ \text{CH}_3 \end{array}$
 c. $\text{CH}_3\text{CH}_2\text{CH}=\text{CHCH}_3$ d. $\begin{array}{c} \text{CH}_3\text{CH}=\text{CCH}_3 \\ | \\ \text{CH}_3 \end{array}$



- Q.14** The reaction $\text{CH}_4 + \text{Cl}_2 \xrightarrow{\text{UV}} \text{CH}_3\text{Cl} + \text{HCl}$ is an example of
- Elimination
 - Addition
 - Substitution
 - Rearrangement
- Q.15** The number of chain isomers of the alkane C_6H_{14} is
- 4
 - 5
 - 6
 - 7
- Q.16** Acetic acid and methyl formate are,
- Metamers
 - Tautomers
 - Functional group isomers
 - cis-trans isomers
- Q.17** Which of the following hydrocarbon shows acidic nature?
- 2-Butyne
 - 1-Butyne
 - Acetylene
 - Both b and c
- Q.18** The IUPAC name of $\text{CH}_3 - \text{CH}(\text{C}_2\text{H}_5) - \text{CH}_2 - \text{C}(\text{C}_2\text{H}_5)_2 - \text{CH}_3$ is
- 2, 2-Dimethyl-4-ethyl pentane
 - 2-Ethyl-2,4-dimethyleptane
 - 2, 2-Dimethyl heptane
 - 3-Ethyl-3,5-dimethylheptane
- Q.19** The catalyst used in Friedel Craft reaction is
- ZnCl_2
 - AlCl_3
 - CuCl_2
 - MgCl_2
- Q.20** Which of the following is least reactive hydrocarbon
- Alkene
 - Alkane
 - Benzene
 - Alkyne
- Q.21** Which of the following does not show chain isomerism
- Pentane
 - Propane
 - Butane
 - Hexane
- Q.22** $\text{CH} \equiv \text{CH} + \text{H}_2\text{O} \xrightarrow[\text{H}_2\text{SO}_4]{\text{HgSO}_4} \text{Y}$ acetaldehyde . Select the compound “Y” in given reaction
- Vinyl alcohol
 - Ethyl alcohol
 - Acetone
 - Formaldehyde
- Q.23** Which compound does not show geometric isomerism
- $\text{CH}_3\text{CH} = \text{CBr}_2$
 - $\text{CH}_3\text{CBr} = \text{CBrCH}_3$
 - $\text{CH}_3\text{CHBrCH} = \text{CHBr}$
 - $\text{BrCH} = \text{CHBr}$
- Q.24** Identify Y in the sequence
- $$\text{CH}_2 = \text{CH}_2 \xrightarrow{\text{HBr}} \text{X} \xrightarrow{\text{KOH(aq)}} \text{Y}$$
- CH_3OH
 - $\text{HOCH}_2\text{CH}_2\text{OH}$
 - $\text{CH}_3\text{CH}_2\text{OH}$
 - C_2H_4
- Q.25** What is the IUPAC name for the following compound
- $$\begin{array}{c} \text{CH}_3 \quad \quad \text{CH}_3 \\ | \quad \quad | \\ \text{CH}_3 - \text{C} - \text{CH}_2 - \text{CH} \\ | \quad \quad | \\ \text{CH}_3 \quad \quad \text{CH}_3 \end{array}$$
- 1,3-Pentamethylpropane
 - 1,1,3,3-Tetramethylbutane
 - 2,4,4-Trimethylpentane
 - 2,2,4-Trimethylpentane
- Q.26** When 1-butene reacts with cold dilute KMnO_4 in basic media, the product formed will be
- 1,1- Butan-diol
 - But-1,2-diol
 - 1,3- Butan-diol
 - But-1,4-diol
- Q.27** The oxidative cleavage with hot conc. KMnO_4 takes place for
- C – C bond cleavage
 - C = C bond cleavage
 - C – H bond cleavage
 - C – O bond cleavage



- Q.28** Which is an aromatic compound that contains only carbon and hydrogen atom.
- Toluene
 - n-hexane
 - Phenol
 - Aniline
- Q.29** The total number of sigma bonds between C–H in benzene are
- 6
 - 12
 - 3
 - 8
- Q.30** The Markownikof's rule is applicable only on
- 2-Butene
 - 2,3 Dimethyl-2-butene
 - 2-Bromo-3-chloro-2-butene
 - 2-Methyl-2-butene
- Q.31** The IUPAC name of the following compound is
 $\text{H}_3\text{C}(\text{CH}_3)\text{C} = \text{CHCH}_2(\text{CH}_3)_2\text{CCH}_3$
- 2, 2, 5–Trimethyl–4–hexane
 - 2, 5, 5–Trimethyl–2–pentene
 - 2, 5, 5 –Trimethyl–2–hexene
 - 2, 5–Dimethyl–2–heptene
- Q.32** The dehalogenation of vic-dihalide occurs when it is treated with 'Zn' dust in an anhydrous solvent like
- CH_3COOH or CCl_4
 - CH_3OH or FeBr_3
 - CH_3COOH or CH_3OH
 - Br_2 or KMnO_4
- Q.33** The hybridization of any carbon atom in polyethylene is
- sp^2 only
 - sp^2 or sp^3
 - sp^3 only
 - sp only
- Q.34** Which one of the following is formed when HBr reacts with 2–butene
- 2–bromobutane
 - 1, 1–dibromobutane
 - 1–bromobutane
 - 1, 2–dibromobutane
- Q.35** The most reactive compound towards nitration is
- 
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- Q.36** When 2-butene is heated with alkaline or acidic KMnO_4 the product will be
- Two moles of acetic acid
 - Butan–2,3-diol
 - Two mole of formic acid
 - 2–butanol
- Q.37** The order of reactivity of halogens for alkanes is
- $\text{F}_2 > \text{Cl}_2 > \text{Br}_2 > \text{I}_2$
 - $\text{F}_2 > \text{Br}_2 > \text{Cl}_2 > \text{I}_2$
 - $\text{F}_2 > \text{I}_2 > \text{Cl}_2 > \text{Br}_2$
 - $\text{I}_2 > \text{Cl}_2 > \text{Br}_2 > \text{F}_2$
- Q.38** Which of the following group of elements and compounds represents all the possible combustion products of methane
- C, CO, CO_2 and H_2O
 - C, CO and H_2O only
 - CO_2 , H_2 and H_2O
 - CO, CO_2 , H_2 and H_2O
- Q.39** The ease of dehydrohalogenation of alkyl halides is in the order
- $1^\circ > 2^\circ > 3^\circ$
 - $2^\circ > 1^\circ > 3^\circ$
 - $2^\circ > 3^\circ > 1^\circ$
 - $3^\circ > 2^\circ > 1^\circ$
- Q.40** The reaction of chlorine with methane is carried out in the presence of light. What is the function of the light
- To break the C – H bonds in methane
 - To break up the chlorine molecules into ions
 - To heat up the mixture
 - To break up the chlorine molecules into free radicals



Q.41 Which of the following decolourizes the alkaline/acidic KMnO_4 solution

- a. C_3H_8 b. C_2H_4
c. C_2H_6 d. C_6H_6

Q.42 For which of the compounds below are cis-trans isomers possible?

- (1) $\text{CH}_3\text{CH}=\text{CH}_2$ (2) $\text{CH}_3\text{CH}=\text{CHCH}_2\text{CH}_3$ (3) $\text{CH}_3\text{CH}=\text{CHCH}_3$

- a. Only 2 b. Both 1 and 2
c. Both 2 and 3 d. All three

Q.43 Identify A $\text{CH}_3\text{CH}_2\underset{\text{Cl}}{\text{CH}}\text{CH}_3 \xrightarrow{\text{AlcKOH}} (\text{A})$

- a. 1-Butene b. 1-Butanol
c. 2-Butene d. 2-Butanol

Q.44 The condensed structural formula for 2,2-dimethyl butane is

- a. C_3H_8 b. C_6H_{14}
c. $\text{CH}_3\text{C}(\text{CH}_3)_2\text{CH}_2\text{CH}_3$ d. $\text{CH}_3\text{CH}(\text{CH}_3)\text{CH}(\text{CH}_3)\text{CH}_3$

Q.45 Which substance is not used as dehydrating agent for dehydration of alcohol to alkene

- a. P_2O_5 b. H_3PO_4
c. H_2SO_4 (conc.) d. ZnO

Q.46 When toluene reacts with Cl_2 in the presence of sunlight, the final product will be

- a. Benzotrichloride b. Benzyl chloride
c. Benzal chloride d. Chlorobenzene

Q.47 $\text{CH}_3-\text{C}\equiv\text{C}-\text{CH}_3 + 2[\text{H}] \xrightarrow[\text{-33}^\circ\text{C}]{\text{Na/Liq.NH}_3} \text{Z}$

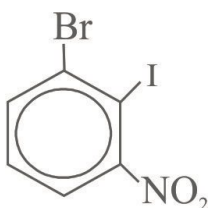
The "Z" in above reaction is

- a. Cis - 2 - Butene b. Cis - 1 - Butene
c. Trans - 2 - Butene d. Trans - 1 - Butene

Q.48 Which one of the following is a initiation step in the reaction between CH_4 and Cl_2

- a. $\text{Cl}_2 \longrightarrow 2\dot{\text{Cl}}$ b. $\dot{\text{C}}\text{H}_3 + \text{Cl}_2 \longrightarrow \text{CH}_3\text{Cl} + \dot{\text{Cl}}$
c. $\dot{\text{C}}\text{H}_3 + \dot{\text{Cl}} \longrightarrow \text{CH}_3\text{Cl}$ d. $\dot{\text{C}}\text{H}_3 + \text{HCl} \longrightarrow \text{CH}_3\text{Cl} + \dot{\text{H}}$

Q.49 The IUPAC name of the following compound is



- a. 2-Bromo-6-nitroiodobenzene b. 3-Bromo-2-iodonitrobenzene
c. 2-Iodo-3-nitrobromobenzene d. 6-Bromo-2-nitroiodobenzene

Q.50 Which one is readily sulphonated?

- a. Benzene b. Benzoic acid
c. Benzaldehyde d. Chlorobenzene

CTS-8 (PHY,CHEM)-KEY

Chemistry

1-D	11-A	21-B	31-C	41-B
2-D	12-C	22-A	32-C	42-C
3-A	13-C	23-A	33-C	43-C
4-B	14-C	24-C	34-A	44-C
5-A	15-B	25-D	35-C	45-D
6-C	16-C	26-B	36-A	46-A
7-D	17-D	27-B	37-A	47-C
8-A	18-D	28-A	38-A	48-A
9-A	19-B	29-B	39-D	49-B
10-D	20-B	30-D	40-D	50-A

Physics

1-D	11-B	21-D	31-D	41-A
2-D	12-A	22-C	32-C	42-C
3-C	13-B	23-A	33-B	43-C
4-C	14-A	24-D	34-B	44-D
5-B	15-A	25-B	35-B	45-D
6-B	16-C	26-B	36-C	46-A
7-C	17-A	27-A	37-B	47-A
8-C	18-D	28-C	38-C	48-D
9-D	19-C	29-C	39-B	49-A
10-A	20-D	30-B	40-C	50-C